MI FluFocus

Influenza Surveillance and Avian Influenza Update

Bureau of Epidemiology
Bureau of Laboratories

Michigan Department of Community Health
MDCH
Jennifer M. Granholm, Governor
Janet Olszewski, Director

Editor: Susan Peters, DVM
Surveillance and Infectious Disease Epidemiology
PetersS1@Michigan.gov

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New updates in this issue:

- **Michigan:** Influenza activity is considerably lower than this time last year, when the first pandemic 2009 H1N1 wave was occurring.
- **National:** The majority of states are reporting "no influenza activity" to the CDC for week 20.
- **International:** WHO recommends that the pandemic phase remain at phase 6 until at least mid-July.

****2009 Influenza A (H1N1) virus Updates****

Please continue to reference the MDCH influenza website at www.michigan.gov/flu for additional 2009 H1N1 information. Local health departments can find guidance documents in the MI-HAN document library. In addition, additional laboratory-specific information is located at the Bureau of Laboratories H1N1 page at http://www.michigan.gov/mdch/0,1607,7-132-2945_5103-213906--,00.html.

****Influenza Surveillance Reports****

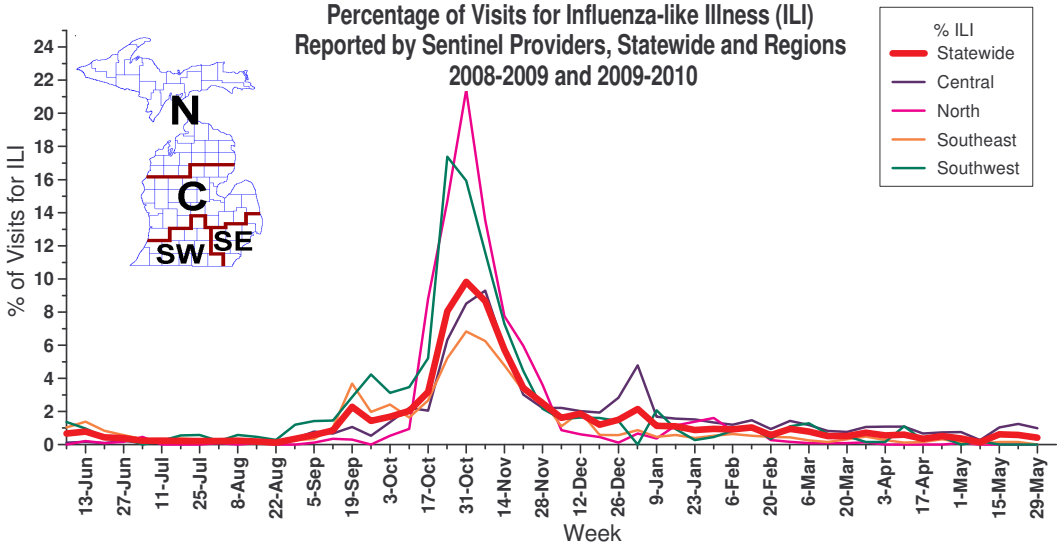
Michigan Disease Surveillance System: MDSS data for the week ending May 29th showed that aggregate influenza case reports were half that of the previous week; this decrease is most likely related to delays in reporting due to the Memorial Day holiday. Individual influenza, novel influenza and 2009 novel influenza reports remained near the previous week's reported levels of almost no activity. Aggregate influenza cases are lower than during the same reporting period in 2009. Individual influenza reports are considerably lower than the same reporting period last year due to the first wave of the H1N1 influenza virus.

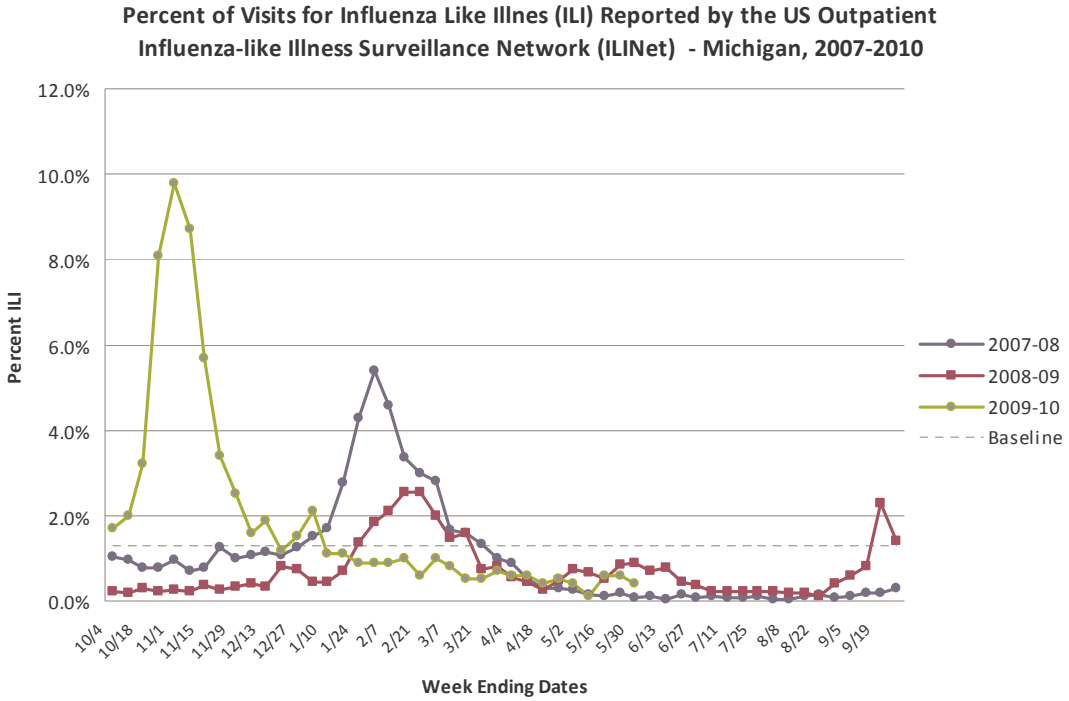
Emergency Department Surveillance: Emergency department visits from constitutional complaints slightly increased, and respiratory complaints slightly decreased, from the previous week's levels. Constitutional complaints are moderately lower compared to the same reporting period last year, while respiratory complaints are similar. In the past week, there were four constitutional alerts in the C(2) and SW(2) Influenza Surveillance Regions. There was one respiratory alert in the C Influenza Surveillance Region.

Over-the-Counter Product Surveillance: Over the past week, OTC product sales of chest rubs and thermometers slightly decreased, pediatric electrolytes slightly increased, and cough/cold aides remained similar to last week's levels. All indicators are consistent with levels seen at this time last year except for sales of cough/cold medication, which is slightly higher.

Sentinel Provider Surveillance (as of June 3): During the week ending May 29, 2010, the proportion of visits due to influenza-like illness (ILI) slightly decreased to 0.4% overall. Thirty-one patient visits due to ILI were reported out of 7,413 office visits. Twenty-five sentinel sites provided data for this report. Activity decreased in two surveillance regions: Central (1.0%) and Southeast (0.0%) and there continued to be no ILI activity in the remaining two surveillance regions: Southwest, and North. Please note that these rates may change as additional reports are received.

As part of pandemic influenza surveillance, CDC and MDCH highly encourage year-round participation from all sentinel providers. New practices are encouraged to join the sentinel surveillance program today! Contact Cristi Carlton at 517-335-9104 or CarltonC2@michigan.gov for more information.





Laboratory Surveillance (as of May 29): During May 23-29, MDCH Bureau of Laboratories identified no influenza isolates. For the 2009-2010 season (starting on October 4, 2009), MDCH BOL has identified 610 influenza isolates:

- 2009 Influenza A (H1N1): 609
- Influenza B: 1

Seven sentinel laboratories reported for the week ending May 29, 2010. All laboratories reported no influenza A or B positive test results (SE, SW, C). One lab reported sporadic RSV positives (SE).

Michigan Influenza Antigenic Characterization (as of June 3): One 2009 H1N1 influenza A virus from Michigan has undergone further characterization at the CDC. This virus was characterized as A/California/07/2009 (H1N1)-like, which is the recommended strain for the H1 component of the 2010-11 Northern Hemisphere vaccine.

Michigan Influenza Antiviral Resistance Data (as of June 3): Results are currently not available for antiviral resistance at CDC for the 2009-2010 season.

Antiviral resistance testing takes months to complete and cannot be used to guide individual patient treatment. However, CDC has made recommendations regarding the use of antivirals for treatment and prophylaxis of influenza. The guidance is available at http://www.cdc.gov/H1N1flu/recommendations.htm.

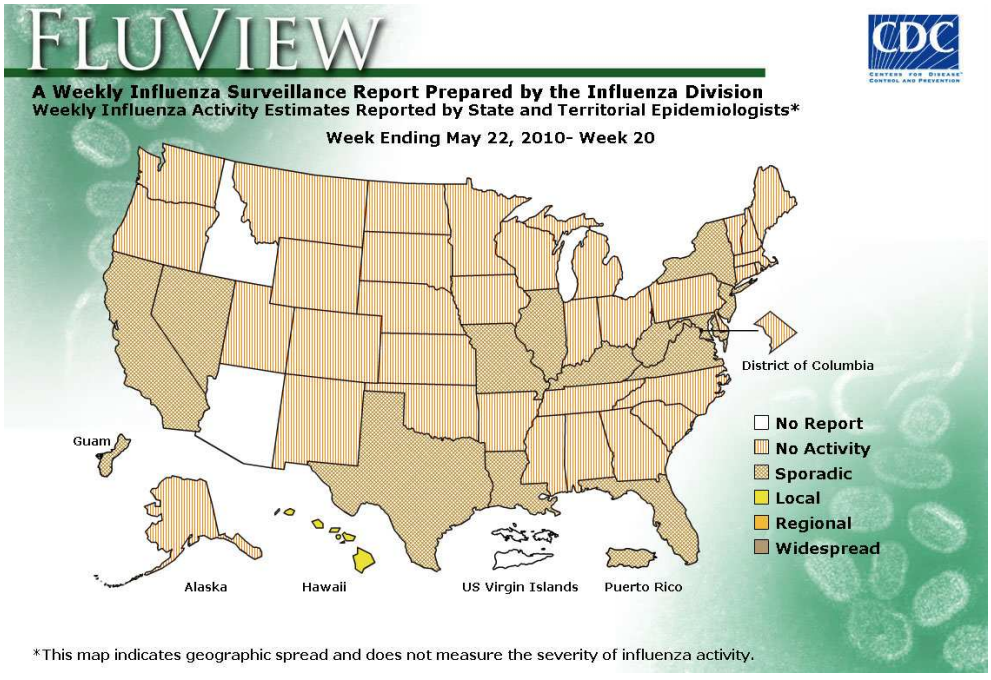
Influenza-Associated Pediatric Mortality (as of June 3): Five 2009 H1N1 influenza-associated pediatric mortalities (SE(3), SW, N) have been reported to MDCH for the 2009-2010 influenza season.

***CDC has asked states for information on any pediatric death associated with influenza. This includes not only any pediatric death (<18 years) resulting from a compatible illness with laboratory confirmation of influenza, but also any unexplained pediatric death with evidence of an infectious process. Please immediately call MDCH to ensure proper specimens are obtained. View the complete MDCH protocol online at http://www.michigan.gov/documents/mdch/ME_pediatric_influenza_guidance_v2_214270_7.pdf.

Influenza Congregate Settings Outbreaks (as of June 3): Seven congregate setting outbreaks with confirmatory novel influenza A H1N1 testing (2SE, 3 SW, 1C, 1N), and three outbreaks associated with positive influenza A tests (2C, 1N) have been reported to MDCH for the 2009-2010 influenza season. These are 8 school facilities and 2 long term care facilities. Human metapneumovirus was confirmed in one outbreak in a long term care facility (SW) in February. Adenovirus was confirmed from one outbreak in an elementary school (SW) in May.

During fall 2009, 567 influenza-related school and/or district closures in Michigan (Public Health Preparedness Region 1 - 55, Region 2N - 4, Region 2S – 8, Region 3 - 54, Region 5 - 153, Region 6 - 100, Region 7 - 109, Region 8 - 84) were reported.

National (CDC [edited], May 28): During week 20 (May 16-22, 2010), influenza activity decreased in the U.S. Two (0.2%) specimens tested by U.S. World Health Organization and National Respiratory and Enteric Virus Surveillance System collaborating laboratories and reported to CDC/Influenza Division were positive for influenza. Both subtyped influenza A viruses were 2009 influenza A (H1N1). The proportion of deaths attributed to pneumonia and influenza (P&I) was below the epidemic threshold. Three influenza-associated pediatric deaths were reported and were associated with 2009 influenza A (H1N1) virus infection. The proportion of outpatient visits for influenza-like illness (ILI) was 1.0%, which is below the national baseline of 2.3%. All 10 regions reported ILI below region-specific baseline levels. No states reported widespread or regional influenza activity. One state reported local influenza activity. Guam, Puerto Rico, and 13 states reported sporadic influenza activity. The District of Columbia and 34 states reported no influenza activity, and the U.S. Virgin Islands and two states did not report.



To access the entire CDC weekly surveillance report, visit http://www.cdc.gov/flu/weekly/fluactivity.htm

International (WHO Pandemic update 102 [edited], May 28): The most active areas of pandemic influenza virus transmission currently are in parts of the Caribbean and Southeast Asia, where low level circulation is occurring. Except for localized areas of pandemic influenza activity in parts of Chile, there is little evidence of pandemic influenza activity in the temperate zone of the southern hemisphere. Of note, Respiratory Syncitial Virus (RSV) is widely circulating in South America resulting in an increase in respiratory disease activity, complicating somewhat the interpretation of syndromic surveillance data from the area. RSV primarily affects children under the age of 5 years. Seasonal influenza A viruses continue

to be detected at low to sporadic levels in all regions. Influenza B has been reported in increasing but low numbers in South America, where it only recently appeared, while it is decreasing in Asia.

In the Caribbean and Central America, Cuba and to a much lesser extent Costa Rica, continue to experience active circulation of pandemic influenza virus. In Cuba, current pandemic influenza activity, which began during late February 2010, remains unchanged since reaching a plateau during mid-April 2010; in addition, over the past month, there have been sporadic detections of seasonal influenza B viruses and also evidence of co-circulation of other respiratory viruses. In Costa Rica, sustained low levels of pandemic influenza virus have been co-circulating with other respiratory viruses since the beginning of 2010. Several other countries in the region continue to report sporadic detections of seasonal influenza B viruses and low level co-circulation of other respiratory viruses.

In the tropical zone of South America, pandemic and seasonal influenza viruses continued to circulate at low to sporadic levels. In Peru, recent regional increases in respiratory diseases activity (in children under age 5) has been largely associated with circulating respiratory syncytial virus (RSV). In Colombia and Brazil, low levels of pandemic and seasonal influenza H3N2 viruses have been detected over the past month. In Bolivia, a recent period of circulation of predominantly seasonal influenza type B viruses appears to have concluded.

In Asia, overall pandemic influenza activity remains low to sporadic, except in limited areas of south and southeast Asia, particularly Singapore, Malaysia, and Bangladesh. In Singapore, levels of ARI have been elevated since April 2010 and in recent weeks have remained near epidemic threshold; approximately 39% of respiratory specimens from ILI patients tested positive for pandemic influenza virus during mid May 2010. In neighboring Malaysia, limited data suggest that active pandemic influenza virus circulation persist after recent activity peaked during mid April 2010; small numbers of fatal cases have been reported since that time. In Bangladesh, co-dominant circulation of pandemic and seasonal influenza B viruses has been observed since mid April 2010, however, the overall intensity of respiratory diseases was reported to low during this period. Low levels of pandemic influenza virus continued to circulate in western India, while low and declining levels of seasonal influenza B viruses continued to be reported across East Asia.

In Sub-Saharan Africa, limited data from several countries continues to suggest that active transmission of pandemic influenza virus in West Africa has now largely subsided. In addition to the persistence of low level circulation of pandemic influenza virus in Ghana, sporadic detections of pandemic influenza virus have been reported during the past month in Cameroon, Angola, and Rwanda. In Cameroon, there has been persistent active circulation of seasonal influenza B viruses since mid-March 2010.

In the temperate regions of the northern and southern hemisphere, overall pandemic influenza activity remains low to sporadic. In southern hemisphere, Chile continues to report increased ILI in several regions of the country (notably Los Lagos), however, the increase in respiratory disease activity has been predominantly associated with circulating RSV and only to a much lesser extent pandemic influenza virus. In neighboring Argentina, Paraguay, and Uruguay, all recent respiratory diseases activity during the past month has been associated with viruses other than influenza. Similarly, there have been no recent detections of influenza virus in South Africa. In New Zealand and Australia, overall levels of ILI remain low; only sporadic detections of seasonal influenza H3N2 and pandemic influenza viruses have been recently reported in Australia.

Weekly reporting of influenza activity to the CDC has concluded for the 2009-2010 season.

For those interested in additional influenza vaccination and education information, the MDCH *FluBytes* is available at http://www.michigan.gov/mdch/0,1607,7-132-2940_2955_22779_40563-125027--,00.html.

Novel Influenza Activity and Other News

WHO Pandemic Phase: Phase 6 – characterized by increased and sustained transmission in the general population. Human to human transmission of an animal or human-animal influenza reassortant virus has caused sustained community level outbreaks in at least two WHO regions.

National, Research (University of Michigan press release, May 28): Every autumn, as predictably as falling leaves, flu season descends upon us. Every spring, just as predictably, the season comes to a close. This cyclical pattern, common in temperate regions, is well known, but the driving forces behind it

have been in question.

Do existing strains die off each spring, only to be replaced each fall by new founding strains from other parts of the world, or does a "hidden chain of sickness" persist over the summer, seeding the next season's epidemic? A genetic analysis by University of Michigan postdoctoral fellow Trevor Bedford and colleagues at U-M, Howard Hughes Medical Institute and Florida State University reveals that in the United States, not all strains of influenza die off at the end of winter; some move southward to South America, and some migrate even farther. The paper is scheduled to be published online May 27 in the open-access journal PLoS Pathogens.

"The prevailing view that has developed over the past three years or so is the out-of-tropics hypothesis, in which the strains that bring about each temperate flu season originate from China and Southeast Asia, where influenza A is less seasonal," Bedford said. He and his colleagues tested that hypothesis by analyzing genetic sequences from influenza A (H3N2) viruses collected from patients around the world between 1998 and 2009 and constructing a tree showing relationships among the viruses. The resulting mathematical model accounted for evolutionary processes and rates of migration.

"We found that although China and Southeast Asia play the largest role in the influenza A migration network, temperate regions---particularly the USA---also make important contributions," Bedford said. Rather than dying off at the end of our flu season, many strains simply move on to more favorable environments.

The results have implications for public health efforts aimed at combating the disease. For example, the new knowledge that influenza frequently migrates out of the U.S. argues for caution in using antivirals, which can promote development of drug-resistant strains. If, as previously thought, those strains died out at the end of the season, they would not be a problem, but their newly-discovered ability to survive and circulate means resistant strains can spread from the U.S. throughout the world. On the flip side, the finding also means that vaccination programs outside of China and Southeast Asia can be effective in curbing influenza's spread.

In addition, growing knowledge about patterns of flu migration eventually may make it possible to tailor vaccines to particular locations, Bedford said. "We found, for instance, that South America gets almost all of its flu from North America. This would suggest that rather than giving South America the same vaccine that the rest of the world gets, you could construct a vaccine preferentially from the strains that were circulating in North America the previous season. As we gather more data from other regions, this could be done for the entire world."

The research also can inform disease surveillance, Bedford said. "By doing this kind of research, we get a clearer idea of where in the world flu is actually coming from. We know that it's mostly Southeast Asia, but now we see that it can come out of temperate regions as well, so our surveillance needs to become more global."

International, Pandemic Status (Reuters Health [edited], June 3): The H1N1 pandemic is not yet over, although its most intense activity has passed in many parts of the world, the World Health Organisation (WHO) said on Thursday [3 Jun 2010] after a review of the flu outbreak by independent experts.

The WHO emergency committee, composed of 15 external advisers, said it remained critical for countries to maintain vigilance concerning the pandemic, including necessary public health measures for disease control and surveillance, WHO Director-General Margaret Chan said in a statement. "We're still in the pandemic," WHO spokesman Gregory Hartl told Reuters.

Chan said that pandemic flu activity was expected to continue, and the committee would meet again by mid-July to review the status of the outbreak once more data from the winter influenza season in the southern hemisphere was available.

The panel met on Tuesday, but Chan had delayed the announcement until Thursday as the committee, whose members were spread around the world for the meeting by teleconference, put the final touches to the wording of their recommendation.

Chan's decision, based on the committee's recommendation, means that the outbreak, widely known as swine flu, remains at phase 6 on the WHO's pandemic scale, which has been at the top level of 6 since June 2009.

The next meeting will decide to recommend whether to retain that level, declare the pandemic has passed, or move into a transitional "post-peak" phase. The U.N. agency's guidance on whether a disease constitutes a pandemic determines how its 193 member governments handle an outbreak, including stockpiling vaccines and antivirals.

WHO experts say that the virus remains a threat to some vulnerable people, notably pregnant women, young children and those with respiratory problems, and such groups would continue to need vaccinations. "It is predicted that H1N1 will continue to be the primary or overwhelming virus among influenza viruses for quite a while," Hartl said on Tuesday. "Pandemic or no pandemic, H1N1 will still exist. If there is no pandemic, it means that H1N1 is behaving like a normal flu virus."

The WHO has been accused of exaggerating the dangers of the H1N1 outbreak, which emerged in April last year. Symptoms suffered by most people infected with the virus have been mild. But WHO experts fear it could spread easily among people if it were to mutate into a more dangerous or lethal form. Laboratory tests have confirmed more than 18,000 deaths from H1N1 infection, according to WHO figures, but the actual global death toll is much higher and will take at least a year after the pandemic ends to establish. The virus is currently most active in parts of the Caribbean and Southeast Asia, and activity in Africa is low or sporadic.

The emergency committee has been waiting for signs of how the virus is developing in the southern hemisphere winter before making a full pronouncement on its state. Chan usually follows the recommendations of the committee, all of whose members except its chairman, Australian professor John Mackenzie, are anonymous to protect them from undue influence.

Michigan Wild Bird Surveillance (USDA, as of June 3): For the 2010 testing season (April 1, 2010-March 31, 2011), highly pathogenic avian influenza subtype H5N1 has not been recovered from 67 samples tested nationwide, including 3 Michigan samples (1 live wild bird, 2 hunter-killed birds). For more information, visit the National HPAI Early Detection Data System at http://wildlifedisease.nbii.gov/ai/.

To learn about avian influenza surveillance in Michigan wild birds or to report dead waterfowl, go to Michigan's Emerging Disease website at http://www.michigan.gov/emergingdiseases.

Please contact Susan Peters at PetersS1@Michigan.gov with any questions regarding this newsletter or to be added to the weekly electronic mailing list.

Contributors

MDCH Bureau of Epidemiology - Sally Bidol, MPH; Cristi Carlton, MPH; Jamey Hardesty, MPH

MDCH Bureau of Laboratories – Anthony Muyombwe, PhD; Victoria Vavricka, MS

Table 1. H5N1 Influenza in Poultry (Source: http://www.oie.int/downld/AVIAN%20INFLUENZA/A_AI-Asia.htm Downloaded 5/19/10)

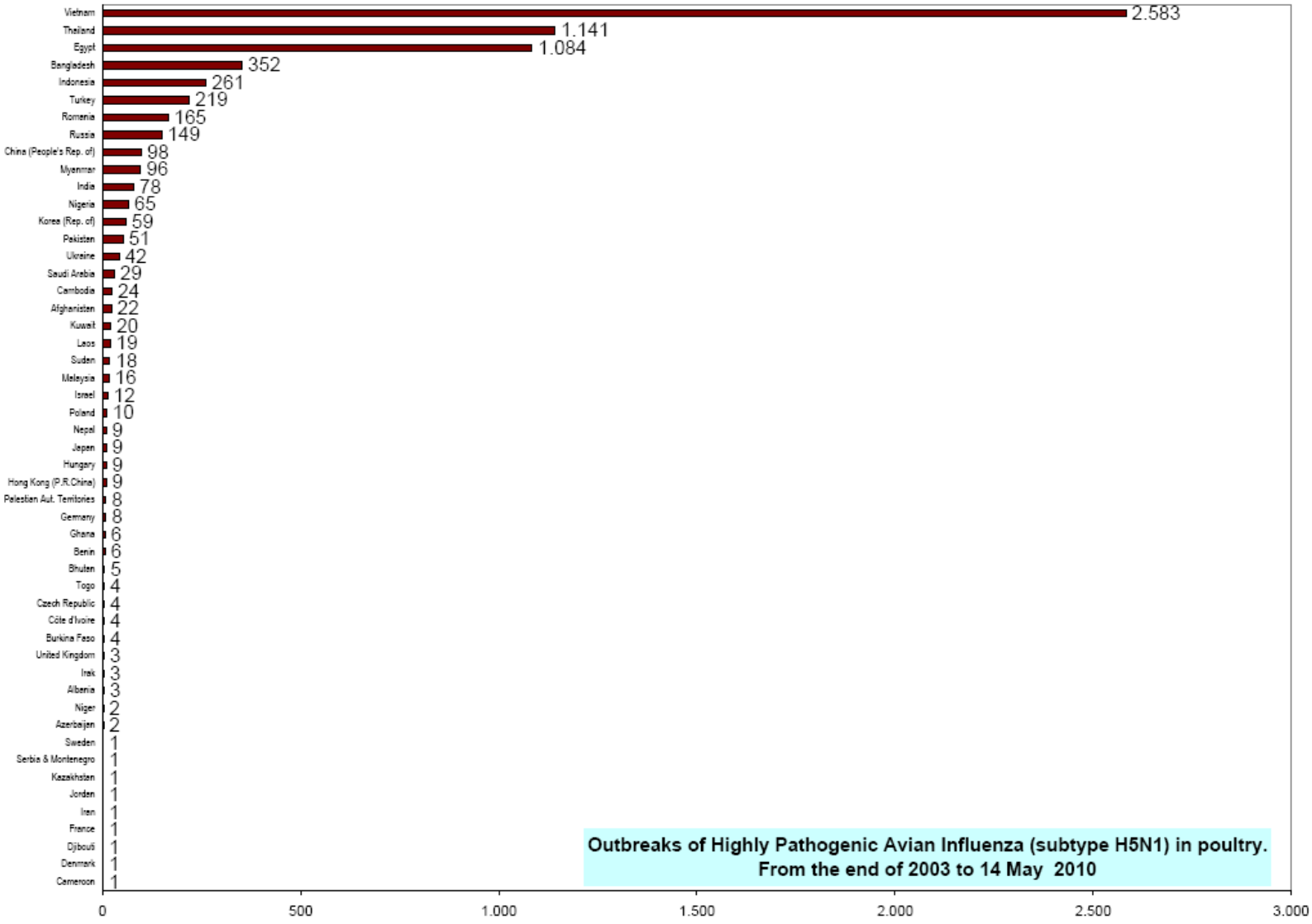


Table 2. H5N1 Influenza in Humans - Cases up to May 6, 2010. http://www.who.int/csr/disease/avian_influenza/country/cases_table_2010_05_06/en/index.html. Downloaded 5/10/2010. Cumulative number of lab-confirmed cases reported to WHO. Total cases includes deaths.

Country	2003		2004		2005		2006		2007		2008		2009		2010		Total	
	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths
Azerbaijan	0	0	0	0	0	0	8	5	0	0	0	0	0	0	0	0	8	5
Bangladesh	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
Cambodia	0	0	0	0	4	4	2	2	1	1	1	0	1	0	1	1	10	8
China	1	1	0	0	8	5	13	8	5	3	4	4	7	4	0	0	38	25
Djibouti	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0
Egypt	0	0	0	0	0	0	18	10	25	9	8	4	39	4	19	7	109	34
Indonesia	0	0	0	0	20	13	55	45	42	37	24	20	21	19	3	2	165	136
Iraq	0	0	0	0	0	0	3	2	0	0	0	0	0	0	0	0	3	2
Lao People's Democratic Republic	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	2	2
Myanmar	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
Nigeria	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	1
Pakistan	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	0	3	1
Thailand	0	0	17	12	5	2	3	3	0	0	0	0	0	0	0	0	25	17
Turkey	0	0	0	0	0	0	12	4	0	0	0	0	0	0	0	0	12	4
Viet Nam	3	3	29	20	61	19	0	0	8	5	6	5	5	5	7	2	119	59
Total	4	4	46	32	98	43	115	79	88	59	44	33	73	32	30	12	498	294